



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/748,930	12/30/2003	Angel Stoyanov	25277	1937

28624 7590 05/01/2007
WEYERHAEUSER COMPANY
INTELLECTUAL PROPERTY DEPT., CH 1J27
P.O. BOX 9777
FEDERAL WAY, WA 98063

EXAMINER

CORDRAY, DENNIS R

ART UNIT	PAPER NUMBER
----------	--------------

1731

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	05/01/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 05/01/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patents@weyerhaeuser.com

Office Action Summary

Application No.

10/748,930

Applicant(s)

STOYANOV ET AL.

Examiner

Dennis Cordray

Art Unit

1731

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-16,19 and 20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-16,19 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. The previously indicated allowability of claims 17 and 18 is withdrawn in view of a modified interpretation of the previously cited references. Rejections based on the modified interpretation follow.
2. Applicant's arguments, see pp 5-10, filed 2/27/2007, with respect to the rejection of claims 1, 3-7, 9, 10 and 16 under 35 U.S.C. 102(b) or 35 U.S.C. 103(a) have been fully considered but are not persuasive. However, the rejection has been amended as detailed below.

Applicant argues on pp 5-6 that a polycarboxylic acid that reacts with cellulose can no longer act as a binder. Applicant further argues that Hansen et al do not disclose using a crosslinking agent in the presence of the claimed amount of polyol. Applicant argues that Hansen et al do not disclose the claimed Whiteness Index and L value.

Instant Claim 1 is broadly directed to a structure comprising crosslinked cellulosic fibers reacted with a crosslinking agent in the presence of about 1-10% of the weight of the cellulosic fiber of a C₄-C₁₂ polyol. No specific crosslinking agent or polyol is claimed.

Hansen et al discloses crosslinking agents and polyols in at least as much detail as recited in the claims rejected over the reference. Hansen et al teaches polycarboxylic acids as crosslinking agents for cellulosic fibers and recites citric acid as an example (col 2, lines 1-4; col 38, lines 35-37). Hansen et al discloses preferred

Art Unit: 1731

particle binders, such as a polyol, and preferred groups of particle binders, such as a polycarboxylic acid and a polyol (col 19, lines 50-61 and particularly line 61). Suitable particle binders include α -hydroxy polycarboxylic acids (citric or tartaric acid are recited as examples), polyols and polyhydric alcohols (monosaccharide and disaccharide are recited as examples that are C₄-C₁₂ acyclic polyols per the definition given on p 4, lines 12-13 of the instant Specification) (col 15, lines 41-45; col 16, lines 57-67; col 20, lines 34-40). The binders are added in an amount from 3-80% by weight of the fibers, particles and binders, and preferably from 3-25% by weight (col 4, lines 41-49; col 5, lines 3-6). The particles are preferably added in an amount from 5-80% by weight. A preferred weight ratio of particles to binder is 2:1 to 4:1. Thus, the amount of binder present significantly overlaps the claimed amount. The particle binders can be added before, after or simultaneously with curing (col 42, lines 31-34). Using any crosslinking agent, the disclosure reads at least on the structural features of Claim 1. In addition, Claims 38 and 44 recite that a binder and crosslinking agent are applied to the fibers, the treated fibers are cured (in the presence of the binder) and that sufficient functionality remains in the binder to bind a substantial portion of the particles to the fibers. The purpose of the binder of Hansen et al is different than for the polyol of the instant application but the resulting composition and crosslinked structure significantly overlap the claimed composition and structure. The recited properties of the structure do not limit the structure but occur as a result of the structure.

With regard to the obviousness rejection, Applicant argues on pp 5-10 that the disclosed binders and combinations of binders represent a large group and not all of the

Art Unit: 1731

possible combinations will result in the claimed increase in wet bulk and Whiteness Index. Applicant further argues that Hansen et al gives no guidance as to which combinations will give the Whiteness Index of the claimed invention. Applicant also argues that there is no motivation to the skilled artisan to use the claimed species of polyols, such as sorbitol or xylitol, because the submitted Declaration shows that there is no increase in bulk or Whiteness Index when using the claimed species independently. Applicant argues that, while Hansen et al discloses situations wherein the binder can act as a crosslinking agent, the statement is in the context of the given example XXVI, where the crosslinking agent is dimethyloldihydroxyethylene urea. Applicant also argues that Hansen et al do not state that combinations of polyols, polycarboxylic acids and polyamines can be used as crosslinking agents but that each, individually can crosslink. Applicant concludes that virtually endless experimentation would be required to arrive at the instant invention.

The disclosure of Hansen et al is discussed above. One of ordinary skill in the art would find it obvious to choose citric acid as a well known crosslinking agent, to use a polyol or a combination of a polycarboxylic acid and a polyol as a preferred binder and to cure the crosslinking agent in the presence of the binder as recited in the claims of Hansen et al.

It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by applicant. >See, e.g., *In re Kahn*, 441 F.3d 977, 987, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006) (motivation question arises in the context of the general problem confronting the inventor rather than the specific problem solved by

Art Unit: 1731

the invention); Cross Med. Prods., Inc. v. Medtronic Sofamor Danek, Inc., 424 F.3d 1293, 1323, 76 USPQ2d 1662, 1685 (Fed. Cir. 2005) ("One of ordinary skill in the art need not see the identical problem addressed in a prior art reference to be motivated to apply its teachings.")

The Declaration of Stoyanov is not relevant to Hansen et al's purpose. Applicant has demonstrated that some acyclic polyols do not crosslink cellulosic fibers. Whether or not the polyol actually crosslinks the fibers is also irrelevant to the instant claims, which recite only that the crosslinking occurs in the presence of the polyol. In any case, the Declaration and instant Specification only teach the results of crosslinking fibers with the claimed acids, sodium hypophosphite and the claimed polyols. No comparison is made with Hansen et al.

3. Applicant's arguments, see pp 5-10, filed 2/27/2007, with respect to the rejection of claim 8 under 35 U.S.C. 103(a) over Hansen et al and Smith et al have been fully considered but are not persuasive.

Applicant admits on p 11 that the skilled artisan would expect citric acid and malic acid to perform similarly. Smith et al was used merely to teach that citric acid, malic acid and tartaric acid are known crosslinking agents for cellulosic fibers and one would have been obvious over the other as a functional equivalent.

4. Applicant's arguments, see pp 5-10, filed 2/27/2007, with respect to the rejection of claims 1 and 3-16 under 35 U.S.C. 103(a) over Hansen et al ('256) in view of Hansen et al ('326) have been fully considered but are not persuasive.

Applicant presents arguments against Hansen et al ('326) that are similar to those against Hansen et al ('256). Hansen et al ('326) was used primarily to teach the use of sorbitol as a particle binder for an equivalent application as disclosed by Hansen et al ('256).

Claim Rejections - 35 USC § 103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 3-7, 9-10, 16 and 19-20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hansen et al (5589256).

Hansen ('256) et al discloses crosslinked cellulosic fibers comprising particle binders (Abs; col 37, lines 30-43; col 38, line 17 to col 41, line 16). One or more particle binders can be used, including α -hydroxy polycarboxylic acids (citric or tartaric acid are recited as examples) and polyols and polyhydric alcohols (monosaccharide and disaccharide are recited as examples that are C₄-C₁₂ acyclic polyols per the definition

Art Unit: 1731

given on p 4, lines 12-13 of the instant Specification) (col 15, lines 41-45; col 16, lines 57-67; col 20, lines 34-40). Groups of particle binders are preferably used together, such as a polycarboxylic acid and a polyol (col 19, lines 54-61 and particularly line 61). The binders are added in an amount from 3-80% by weight of the fibers, particles and binders, and preferably from 3-25% by weight (col 4, lines 41-49; col 5, lines 3-6). The particles are preferably added in an amount from 5-80% by weight. A preferred weight ratio of particles to binder is 2:1 to 4:1. Thus, the amount of binder present significantly overlaps the claimed amount.

The particle binders can be added before, after or simultaneously with curing (col 42, lines 31-34). Where the binders can also function as an interfiber crosslinking agent (citric acid and polyols are recited as examples), the fibers should contain at least 20% by weight of water, which inhibits ester bond formation and ensures that adequate binder will remain in the fibers to bind the particles to the fibers (col 42, lines 38-57). Thus, in some embodiments, the fibers are crosslinked in the presence of the particle binder that comprises an α -hydroxy polycarboxylic acid and a polyol. Claims 38 and 44 recite that a binder and crosslinking agent are applied to the fibers, the treated fibers are cured (in the presence of the binder) and that sufficient functionality remains in the binder to bind a substantial portion of the particles to the fibers. Examples are given of fibers having a wet bulk of 16.1 cc/g or greater (col 29, lines 1-10).

Hansen ('256) et al does not disclose the Whiteness Index, L value, a-value or b-value of the fibers. The reference discloses all the structural limitations of the claims (in this case, cellulosic fibers crosslinked with an α -hydroxy polycarboxylic acid in the

presence of 1 to 10% C₄-C₁₂ polyol by weight of the fibers. Where the claimed and prior art apparatus or product are identical or substantially identical in structure or composition, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). In other words, when the structure recited in the reference is substantially identical to that of the claims, the claimed properties or functions are presumed to be inherent (MPEP 2112- 2112.01).

6. Claim 8 is rejected under 35 U.S.C. 103(a) as unpatentable over Hansen et al ('256) in view of Smith et al (US 2002/0090511).

Hansen et al ('256) does not disclose malic acid as a crosslinking agent. Hansen et al ('256) does teach that polycarboxylic acids are known to be crosslinking agents for cellulosic fibers and recites citric acid as an example (col 2, lines 1-4; col 38, lines 35-37).

Smith et al discloses that citric, malic and tartaric acids are crosslinking agents for cellulosic fibers p 6, pars 71 and 74; pp 13-14, Tables 3 & 4).

The art of Hansen et al ('256), Smith et al and the instant invention is analogous as pertaining to the crosslinking of cellulosic fibers. The claimed polycarboxylic acids are all α -hydroxy polycarboxylic acids and one of ordinary skill in the art would have expected them to function similarly. It would have been obvious to one of ordinary skill in the art to use any of the claimed acids as a crosslinking agent for the fibers of Hansen et al ('256) in view of Smith et al as well known and functionally equivalent options and have a reasonable expectation of success.

7. Claims 11-15 are rejected under 35 U.S.C. 103(a) as unpatentable over Hansen et al ('256) in view of Hansen et al (5789326).

The disclosure of Hansen et al ('256) is detailed above. Hansen et al ('256) does not disclose the specific acyclic polyols and heterosides of the instant Claims.

Hansen et al ('326) discloses crosslinked cellulosic fibers comprising particle binders (Abs; col 10, lines 26-40; col 45, lines 30-33). Particle binders include α -hydroxy polycarboxylic acids (citric is recited as an example) and polyols (sorbitol is claimed) (col 46, lines 7-15; Claims 3 and 4). The particle binders can be added before, after or simultaneously with curing (col 45, line 66 to col 46, line 3). Where the binders can also function as an interfiber crosslinking agent (citric acid and polyols, are recited as examples), the fibers should contain at least 20% by weight of water, which inhibits ester bond formation and ensures that adequate binder will remain in the fibers to bind the particles to the fibers (col 46, lines 12-29). The crosslinking agent, such as citric acid, or any other crosslinking agent known in the art, can be added independently of the binder (col 42, line 61 to col 43, line 14 and particularly col 43, line 8). Thus, in some embodiments, the fibers are crosslinked in the presence of the particle binder that comprises sorbitol. Examples are given of fibers having a wet bulk of 16.1 cc/g or greater (col 36, lines 15-22). The structure disclosed by Hansen et al ('326) is similar to that disclosed by Hansen et al ('256).

The art of Hansen et al ('256), Hansen et al ('326) and the instant invention is analogous as pertaining to crosslinking cellulosic fibers in the presence of a polyol. It

Art Unit: 1731

would have been obvious to one of ordinary skill in the art at the time of the invention to use sorbitol as a particle binder in the fibers of Hansen et al ('256) in view of Hansen et al ('326) as a functionally equivalent option and have a reasonable expectation of success. It would also have been obvious to one of ordinary skill in the art that the other claimed species of polyol (erythritol, xylitol, arabinitol, ribitol, Mannitol, perseitol, volemitol, maltitol, myo-inositol and lactitol), having structures similar to sorbitol (five to seven hydroxyl groups on adjacent carbon atoms), would be expected to react similarly. It would thus have been obvious to one of ordinary skill in the art to substitute any of the claimed polyols for sorbitol as a particle binder in the fibers of Hansen et al ('256) in view of Hansen et al ('326) as a functionally equivalent option and have a reasonable expectation of success.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 1, 5-8 and 10-15 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over

Art Unit: 1731

(renumbered) claims 1-9 and 11-12 of copending Application No. 10/748977, as detailed in the previous Office Actions. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed fibers in the instant invention are obvious by the method claimed in the copending application (i.e.-by following the method in the copending application, a person with ordinary skill in the art would expect to make the claimed fibers). The claims of the copending application recite crosslinking cellulosic fibers in the presence of a C₄ to C₁₂ polyol, the crosslinking agents and polyols being the same as those of the instant invention.

9. Claims 1, 5-8, 10-12 and 16 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 of copending Application No. 10/815206. The claims of the copending application recite an additional step of bleaching the cellulosic fibers that have been crosslinked in the presence of a C₄ to C₁₂ polyol, the crosslinking agents and polyols being the same as those of the instant invention. The instant application does not exclude the use of bleached fibers or of bleaching the fibers, therefore the fibers of the copending application are a species of the fibers of the instant application and would have the claimed properties (i.e.-Whiteness Index greater than about 69.0 and L-value greater than about 94.5) of the instant application.

10. Claims 1, 3-8, 10, and 12-16 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-14 of

Art Unit: 1731

copending Application No. 10/748969. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed fibers in the instant invention are included in the fiber containing product claimed in the copending application and it would be obvious to make an absorbent product as a typical application of crosslinked cellulosic fibers.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Cordray whose telephone number is 571-272-8244. The examiner can normally be reached on M - F, 7:30 -4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


DRC


ERIC HUG
PRIMARY EXAMINER